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RESEARCH ARTICLE

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CORPORATE ENTREPRENEURSHIP IN A BRAZILIAN PUBLIC INSTITUTION: A MULTIPLE CASE STUDY

Guilherme Beaufreire Pereira da Silva*¹, Renato, Cotta de Melo² and Murillode Oliveira Dias³

^{1,2}UFRJ, Brazil; ³Fundação Getulio Vargas, Brazil

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*Corresponding author:

Guilherme Beaufreire Pereira da Silva,

ABSTRACT

This study addressed the factors that contribute to corporate entrepreneurship (CE) initiatives in a public institution in Brazil. The article is based on an in-depth qualitative study, with the unit of analysis being two managers of Fiocruz, a public institution of research and higher education. Analysis of the two cases was guided by variables that involve the profile of the corporate entrepreneurs: external and internal aspects that stimulate the emergence of the phenomenon as well as its challenges. In this way, it was possible to identify that in addition to the intrapreneurs' characteristics, levels of education and hierarchical positions were also relevant to the development of CE. It can be inferred that autonomy, the time available for developing new ideas, social needs, and the legal structure that guides their actions were the most important factors for developing CE at Fiocruz.

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INTRODUCTION

Entrepreneurship is a relevant initiative for human society (Levie *et al.*, 2015). Halme *et al.* (2012) note that stimuli to entrepreneurship with a focus on combating poverty in underdeveloped or developing countries are more efficient than other traditional initiatives such as humanitarian aid and charity. Turró *et al.* (2014) claim that the importance of entrepreneurship for the performance of a country's economy seems to enjoy a consensus among researchers. Since it is possible to observe that there are few studies on the subject involving Corporate Entrepreneurship (CE) in nonprofit public institutions, especially institutions from emerging economies (Aceituno-Aceituno, 2018; Boore and Porter, 2011; Giannikis and Nikandrou, 2013; Lages *et al.*, 2017; Meynhardt and Diefenbach, 2012; Simsek and Heavey, 2011), this study examines the occurrence of the phenomenon of Corporate Entrepreneurship (CE) in an organization of the Brazilian government. This modality of entrepreneurship emerges in the context of corporations as they strive to transform their processes, products, and services. Guth and Ginsberg (1990) point out that CE initiatives are led by the internal agents of institutions, described as intrapreneurs, that involves two strategic managerial choices: corporate venturing and the transformation of organizations through strategic renewal and, as highlighted by Felício *et al.* (2012), constitute the key elements in taking direct responsibility for turning

an idea into a profitable product or service through innovation and risk-taking. The intrapreneur, as described by these authors, is someone who recognizes the opportunities of change, evaluates them, explores them, and believes that by taking a new path it will be possible to achieve the organization's objectives. This article is organized as follows: after this introduction, the second section explores CE theory. In the third section, we present the methodology adopted and in the fourth section, we describe and discuss the cases researched. We close the paper with its conclusions and limitations as well as suggestions for future studies.

Corporate Entrepreneurship: Christensen (2004) argues that many authors use interchangeably names, although there are different associations with the labels of the concept, hereafter simply Corporate Entrepreneurship (CE). According to Turró *et al.* (2014), Corporate Entrepreneurship (CE) is the sum of a company's innovation, renewal, and venturing efforts. In this case, innovation refers to the firm's commitment to introducing new products, production processes, and organizational methods. Venturing refers to new business creation and strategic renewal (or self-renewal) refers to the creation of new wealth through new combinations of resources (p.361). According to Baruah and Ward (2015) and Boore and Porter (2011), the intrapreneurs share certain characteristics with entrepreneurs, but what distinguishes the former is that they can only achieve their objectives if they are inserted into an organization.

Douglas and Fitzsimmons (2013) in turn list the characteristics shared by intrapreneurs and entrepreneurs: their attitudes toward risk, their perceptions of opportunities, and their initiative regarding the mobilization of resources. Vizitui *et al.* (2018) explain that an entrepreneur can be anyone that has an economic initiative. As per Martiarena (2013), intrapreneurs are individuals dedicated to developing and building a new business within an organization, or people who willingly embrace the task of developing a project of entrepreneurship within an organization. Some authors point out that there is a greater tendency for employees of middle management and operational management to become intrapreneurs (Lages *et al.*, 2017; Meynhardt and Diefenbach, 2012; Rigtering and Weitzel, 2013; Shimizu, 2012). This is because they exercise functions that facilitate knowledge of the processes, products, and services that are developed in their organizations. The decision to take the path of intrapreneurship, according to Chan *et al.* (2017) is not only true of individuals who present entrepreneurial characteristics, as employees with strong motivation for professional development and leadership can also develop CE. An intrapreneur has several characteristics. Urbano and Turró (2013) have identified that one's level of education and ability to identify opportunities represent attributes of the intrapreneur that positively affect CE. Motivation, personal commitment, and energy in developing CE projects when understanding their challenging nature are also characteristics of this agent (Felício *et al.*, 2012; Marques *et al.*, 2018). In turn, Rigtering and Weitzel (2013) have pointed to innovation, initiative, and a willingness to be exposed to risks as additional characteristics of the intrapreneur. It is important to recognize that not all individuals who possess the skills and qualifications to become an intrapreneur will do so, because the risk they perceive may be too great to become engaged in a CE project (Rigtering and Weitzel, 2013). Douglas and Fitzsimmons (2013) have indicated that despite the correlation between risk aversion and the decision to become an intrapreneur, this is not true for the decision to be an entrepreneur and observe that the search for income and autonomy is not decisive for the decision to become an intrapreneur.

Main features of Corporate Entrepreneurship: According to Woo (2018), CE adopts characteristics of entrepreneurship, which are innovation, proactiveness, and risk-taking. The author concluded that these characteristics shape both entrepreneurship and CE. Lages *et al.* (2017) have reinforced this point, stating that CE involves both the organization and the intrapreneur's characteristics. Organizational characteristics, as pointed out by Baruah and Ward (2015), constitute an entrepreneurial culture that allows intrapreneurs to have freedom of action and flexibility in their daily work, tolerance towards negative or unwanted results, and encouragement of innovation and communicating this inside the institution. For Turner and Pennington (2015) the development of CE depends on the knowledge created by the organization and therefore the sharing of knowledge and learning are essential, permitting a change in the knowledge-based resources of an organization and enabling alterations in the structure for the pursuit of better performance (Simsek and Heavey, 2011). In many cases, CE occurs cyclically in organizations, meaning that there are moments in which its development is stimulated and others when it is forgotten (Kelley, 2011). Another characteristic is the legitimization of the intrapreneur as an agent for promoting changes. Legitimation is based on the recognition of trust and support that the organization deposits in the intrapreneur (Halme *et al.*, 2012; Hornsby *et al.*, 2013).

Aspects that Stimulate Corporate Entrepreneurship: The aspects that stimulate the CE phenomenon to emerge and develop have been identified in the internal and external environments of the organizations and the behavioral aspects of the intrapreneurs. Concerning the internal environment, the stimuli that are listed by several authors are (1) support from senior management and the organization for the emergence of new ideas; (2) free time to develop CE projects; (3) autonomy, meaningless rigid organizational structures that allow greater flexibility and freedom for employees; (4) incentives and reward programs; and (5) definition of rules by the organization, demonstrated by tolerance to the trial and error process

and failures in projects, stating the results expected and developing mechanisms for assessing, selecting and using the innovations (Alpkan *et al.*, 2010; Kuratko *et al.*, 2014; 2017; Lages *et al.*, 2017; Marques *et al.*, 2018; Shimizu, 2012). García-Sánchez *et al.* (2018), have suggested factors outside of the organization, such as (1) the external environment, translated in terms of the availability of resources, governmental policies, skilled workforce, expanding market, etc.; (2) stakeholders (investors, employees, managers, customers, and non-governmental organizations) and their interaction with the organization's strategies and the potential information they may have to facilitate the identification of new opportunities; and (3) capacities of absorption, integration, and technology. As for the external conditions that influence the development of CE projects, Kearney *et al.* (2013) have pointed out that dynamic external environments provide a greater possibility for identifying opportunities for developing CE projects, whereas hostile external environments stimulate the search for innovation for generating competitive advantages about their competitors. According to Lages *et al.* (2017), the behavior of intrapreneurs influences CE, being related to aspects of the profile of these agents such as socio-demographic issues (gender, age, marital status, educational qualifications, management training, profession, professional status, city of work), cognitive traits (attention to external business opportunities, experience, and knowledge acquired, optimistic perception of success), psychological traits (creativity and innovation, self-esteem/confidence, autonomy, self-control) and motivational factors (self-accomplishment, family need/influence, status, sociological interaction between the individual and the environment in which he or she is inserted, factors related to economics and government assistance) (Marques *et al.*, 2018). Goosen *et al.* (2002) point out that many authors suggest a possible relationship between CE and financial performance.

Challenges for Corporate Entrepreneurship. Despite the gains that CE may bring to an organization, its implementation and development are not as straightforward as they may seem. Bosma *et al.* (2011) have shown that less than 5% of employees, in the Global Entrepreneurship Monitor survey of 2008, develop CE and this phenomenon is most commonplace in countries with a high gross domestic product (GDP). Baruah and Ward (2015) have identified two reasons for the difficulty in stimulating initiatives of CE: (1) changes in the organization's structure, necessary to support CE initiatives, are very difficult to achieve owing to bureaucratic culture and conservative policy; and (2) the motivation to become intrapreneurs is not equally understood by all employees. According to Lages *et al.* (2017), the challenge for managers is to create an internal environment that facilitates innovation and CE. Although an internal bureaucratic environment discourages the generation of new ideas (Cohen, 1999; Stewart, 2014), the establishment of mutual trust between managers and intrapreneurs is a powerful tool to overcome the obstacles created by an organization's bureaucratic culture. Regardless of the EC's background, the results are not always as expected. The culture and structure of an institution can limit or encourage entrepreneurial actions (Van Wyk and Adonisi, 2012).

Corporate Entrepreneurship in the Public Sector. In contrast to private organizations that seek growth and profit through selling goods and services, public organizations are driven by objectives that meet the desires and wishes of the society that they serve. Similarly, the CE developed in public and private organizations takes on different aspects due to the need to adapt to each type of organization (Kearney *et al.*, 2013). What is created by the CE developed by public organizations is the public value, which is the value created for citizens. However, how to develop and implement CE initiatives where risk-taking behavior is required to leverage public value remains poorly understood (Kearney and Meynhardt, 2016; Kim and Lee, 2009). Nevertheless, according to Meynhardt and Diefenbach (2012), stimulating CE in public organizations does not necessarily mean creating public value. Public managers have used CE as a tool in the pursuit of innovation, new revenue sources, improved services, and improving the efficiency and effectiveness of their activities. However, given that CE in the public sector involves an analysis of

society, there is a need to evaluate and consider the political scenario that shapes the external environment for the project's development (Kearney *et al.*, 2013). According to Meynhardt and Diefenbach (2012), the motivation to participate in CE projects in the public sector is influenced by the needs of the local community and of the main stakeholders, meaning that the intrapreneur of the public sector is highly motivated by the desire to meet the needs of the local community because of "sociological interactions between individuals and their environment" [Marques *et al.*, (2018), p 4]. Another motivation is perceived in terms of the individual's status, social identity, and reputation, as these factors can also stimulate the intrapreneur to seek opportunities for the development of CE projects to meet the aspirations of a community. There is also the desire to stay in a role performed in an organization for a long period, meaning that the individual develops a sense of ownership linked to the role that he or she exercises and has as a goal to stay in this position for a long time (Meynhardt and Diefenbach, 2012). Finally, in the next section, the methodology is presented.

METHODOLOGY

This study examined the Oswaldo Cruz Foundation (FIOCRUZ), headquartered in the city of Rio de Janeiro as the unit of analysis, given the ease and availability of data acquisition, through multiple methods approach, including case study (Yin, 2001), archival research, and qualitative in-depth, semi-structured interviews, conducted from June to July 2019. The invitations were and lasted around ninety minutes each, providing information that allowed the reconstruction of the events that characterized the initiatives and processes of each intrapreneur as well as the difficulties encountered. The use of cross-case analysis was useful in the search for similarities and differences between the cases studied and the pattern-matching analysis was used to compare the results that emerged from the two cases, such as chronologies, timelines, and matrices (Ghauri, 2004).

Research Question: This research addressed the following research questions? What are the factors that contribute to corporate entrepreneurship initiatives in a public institution of research and higher education?

Oswaldo Cruz Institute: Background and Cases: The Oswaldo Cruz Institute was founded on 25 May 1900, created to produce serums and vaccines against the bubonic plague, a disease that ravaged the city of Rio de Janeiro. With the leadership of Oswaldo Cruz, a famous Brazilian bacteriologist, the Institute was the protagonist of sanitary reform in the early years of the 20th century, which eliminated both the bubonic plague and yellow fever in Rio de Janeiro, which was the capital of Brazil at the time. In 1909, the Institute became the protagonist of a new feat. Carlos Chagas, in his threefold discovery, identified the insect vector, the causative agent, and described the pathology of a disease that became known worldwide as Chagas disease. The Oswaldo Cruz Institute (IOC) is a unit of Fiocruz that operates in the areas of research, technological development, and innovation in providing international reference services for diagnosing infectious and genetic diseases and for vector control. In the next sections, the cases are presented, followed by the discussion section.

Case 1: Master's and Doctoral Programs in Mozambique

The Master's in Health Sciences Program began in 2008 and was organized and implemented by the Oswaldo Cruz Foundation (Fiocruz) in Mozambique. The objective of creating this course was to train personnel to fill positions at the National Health Institute (INS) in the areas of biosciences and clinical research. Upon learning of the intention to develop a Master's program in Mozambique, Dr. Wilson Savino, chief of the laboratory of thymus research and coordinator of the graduate courses at the IOC/Fiocruz unit at the time stated that he wanted to lead this project. He was duly appointed its coordinator. The first activity undertaken by Dr. Savino was to set up and write the project, defining the details of the stages along with

their execution schedule. The second step was to gain the approval of the project from Fiocruz's President. The search for sources of funds to establish and implement the project only commenced once approval had been given by the Institute's President. The project team was not based on the influence of the coordinator's personal or professional network. Rather, the project itself was the catalyst, rendering it possible to bring together six researchers from the institution. Even though it was part of a state priority and a project of the Fiocruz President, the coordinator did not experience much pressure from the senior management of the Brazilian institution. There was no formality in the exchange of information with other areas of Fiocruz or other organs of the Brazilian or Mozambican governments. There was a more intense interaction with the President and members of the team through informal meetings. Everyone followed their routine activities; the project became part of their daily activities. To demonstrate the effectiveness of this communication, Dr. Savino gave the example of the graduation ceremony of the first group from the master's course. He mentioned that it took place at the same time as when the President of Brazil was visiting the factory of antiretroviral drugs, enabling the group to receive their diplomas directly from the hands of the President of Brazil. Indeed, Dr. Savino noted that Fiocruz's good reputation with the governments of Brazil and Mozambique was crucial. In his own words, "I don't think it would be possible to do this outside of Fiocruz." Dr. Savino did not notice many obstacles to the development of the project. The financial resources were obtained with the aid of the Center of International Health Relations (CRIS/Fiocruz). Infrastructure resources such as classrooms and laboratories were provided by the National Health Institute (INS) of Mozambique and the human resources were people from Fiocruz, with the support of INS staff.

The Intrapreneur: Wilson Savino holds a doctorate in Science (Cell Biology and Tissue) from the University of São Paulo and a Master's in Histology and Embryology from the Federal University of Rio de Janeiro (UFRJ). He undertook a post-doctorate in Cellular Immunology at Necker Hospital in Paris. He is a full researcher at Fiocruz and is currently (2021) the Regional and National Integration Strategies Coordinator. When he started at Fiocruz, his first task was to put together a research laboratory on the thymus, to develop basic immunology research. To do so, he received an area of 45 m² and was advised to seek funds from a program at the World Health Organization (WHO) called Tropical Disease Research (TDR), a global program of scientific collaboration established in 1975, where the program director had specific funds to initiate research work around the world, which was called the Directors Initiative Fund. After applying for and receiving \$20,000, he began to buy equipment for the laboratory. Even at that time, creativity was an important aspect of his work because he had to use small boxes with Alka-Seltzer to produce CO₂ for cell culture. This invention did not come from Dr. Savino, but it was something very little used. According to Dr. Savino, this solution was given because at the time they did not have the funds for a CO₂ greenhouse: "The only reason a problem exists is to find its solution." A team of students was assembled and the work commenced. Dr. Savino held several high management positions at Fiocruz and outside of it, for example, he was Director of IOC/Fiocruz with the focus of bringing the scientific issue to the center of attention and expanding the scientific policy issue within the unit. He created a formal structure called a Research and Innovation Support Platform (PAPI) along with a bilingual (English/Portuguese) annual report on the scientific activities developed by IOC/Fiocruz. The objective of this report is to expose to Brazilian and foreign researchers the lines of research and the advancement of research at the Institute to promote networking. As Dr. Savino says "Whatever the activity being developed, if we are open to learning, we learn all the time until we are no longer able because of neurodegeneration."

For him, bureaucratic activities are extremely undesirable and he deems Brazil and its state institutions particularly bureaucratic. The activities that give him the most pleasure to develop are those that involve research, developing policies for science, and those that can be achieved by his work philosophy. He expected some kind of reward for certain of the projects he developed, such as more funds for the

laboratory, a higher quantity of scholarships, and a greater budget to participate in congresses. However, this did not happen for this project in Mozambique. In this case, the reward was to hear the INS Director say that the program had contributed greatly to the Institute: to see a student who could barely read a scientific article begin to lead an area of the INS. For him, that is the reward: “There are things in life that don’t have to do with an indicator, but a ‘significator.’”

Case 2 - Research and Innovation Support Platform (PAPI/IOC)

The Research and Innovation Support Platform (PAPI/IOC) is a department of IOC/Fiocruz that brings together a technological innovation nucleus, an area of prospecting in scientific information, a repository of official data from Fiocruz, and a project management area. The project management area provides support to researchers in 72 laboratories for overseeing scientific projects. The Science, Technology and Innovation Legal Framework (Law No. 13,243/2016) created a new legal regulation, giving legal certainty to creating a more dynamic innovation environment in Brazil. Taking advantage of this change in the Brazilian legislation in the figure of its coordinator, Dr. Carlos Eduardo de Andrade Lima da Rocha began to seek options for partnerships to develop projects with other institutions for growth in the area of research at IOC/Fiocruz. PAPI already existed as a department before the projects of a partnership started being developed and was an area composed of 18 professionals. It was not created for the development of CE projects, as Kelley (2011) has noted when demonstrating the cyclical character of such initiatives. According to Dr. Carlos Eduardo, “the legal framework was a catalyst. The idea of developing partnerships for IOC/Fiocruz research projects was an issue that was asleep in the institution. The legal framework provided legal confidence so that we could work according to this new model.” Dr. Carlos Eduardo started his post-doctoral studies in Portugal in July 2019 and took in his luggage not only academic ambitions. He was appointed the representative of the institution in Europe for contacting, searching, and establishing partnerships with European networks for promoting innovation. This project, which can be regarded as PAPI’s internationalization, aims to broaden the horizons of IOC/Fiocruz’s research by seeking not only financial resources (which may not be the most important aspect of this project), but also resources such as sharing areas of development, expertise, teams and technological development procedures and practices, which according to Dr. Carlos Eduardo himself “are difficult to be measured, but are very valuable resources.” The idea of internationalization arose from the legal framework itself, in particular the chapter that deals with the subject of the internationalization of the Institutions of Science, Technology, and Innovation (CTI). During his post-doctoral studies in Portugal, Dr. Carlos Eduardo had meetings with potential partners in some European countries with the travel costs and accommodation expenses being covered by himself without any support from IOC/Fiocruz other than the ordinance of his legitimate position as representative and his salary.

The Intrapreneur: Dr. Carlos Eduardo joined Fiocruz by passing an exam in 2006 for the position of Health Management Analyst. He holds master’s and doctoral degrees in Biomedical Engineering from the Federal Technological University of Paraná (UTFPR) in Curitiba. From 2006 to 2009 he served as an analyst in COGEAD (General Coordination of Administration) in Rio de Janeiro. In 2009, he was invited to participate in the establishment of the Carlos Chagas Institute, a biotechnology hub of Fiocruz in the state of Paraná, known as Fiocruz/Paraná or ICC/Fiocruz. He remained at Fiocruz/Paraná until 2017, where he had the opportunity to hold various positions such as the unit’s administrator, head of planning, head of the budget, head of facilities, head of purchasing, financial officer, head over the nucleus of technological innovation and vice director of management and institutional development. Many of these positions were filled at the same time because he held more than one position simultaneously throughout his career at Fiocruz/Paraná. This demonstrates his ability to take on responsibility and risk. Upon returning to Fiocruz in Rio de Janeiro in 2017, he was an Assessor to the Vice-President of Research and Biological Collections at

VPPCB/Fiocruz and in 2018 took on the PAPI/IOC project. The multiplicity of functions he has held throughout his career demonstrates his enterprising character, or in his own words, “when a challenge is offered to me, I agree to take on the role that is offered to me,” a fact that can be confirmed with his decision to go to Paraná to set up a new Fiocruz unit. According to Dr. Carlos Eduardo, despite the autonomy he enjoys to carry out his work, the top management of IOC/Fiocruz is very active in supporting the initiatives of PAPI in terms of presentations, holding joint meetings, and so forth. However, there are challenges involved in developing the work, such as the organizational culture of IOC/Fiocruz, both in terms of management and research. The biggest risk that he faces is disbelief. If the project fails to bear fruit, he would perceive that his credibility has been tarnished. Another risk that he identified is a certain degree of “envy” if the project reaches the level expected.

CASES ANALYSIS

Analysis of the cases assumed as its basis the study’s theoretical reference at both the individual and the comparative level. The following procedures were adopted for this analysis: (i) encoding the information obtained from the interviews by the study’s dimensions (agents developing ce, characteristics of ce, and aspects that stimulate ce); (ii) encoding the information obtained from other sources within the study’s analysis categories; (iii) preparing comparative tables for each category to explain the occurrence of each case examined; (iv) pattern matching of each case, comparing the cases both among themselves and with the study’s theoretical reference.

Agents Developing Corporate Entrepreneurship

Table 1. Profile of the intrapreneurs

Interviewee	Academic Background	Previous Work Experience	Course Abroad	Other Languages
				Domain
Carlos Eduardo	Doctorate in 2018	Middle management positions for a long time, but assumed senior management positions.	Post doctorate in 2019 - University of Aveiro (UA) Portugal.	English and Spanish
Wilson Savino	Doctorate in 1982	Assumed leadership positions not restricted to middle management.	Post-doctorate in 1985.	English, French and Spanish

Observe in Table 1 that the two intrapreneurs have Ph.D. in their areas of expertise with different positions in public service. This characteristic seems to support Urbano and Turró (2013), who indicate that the intrapreneur’s level of education positively affects CE. In both cases, we can observe that the intrapreneurs are not restricted to middle management positions. Meynhardt and Diefenbach (2012); Rigtering and Weitzel (2013); Shimizu (2012) and Lages *et al.* (2017) all indicate that employees of middle management and operational management have a greater probability of becoming intrapreneurs. Chan *et al.* (2017), in turn, note that CE is for employees with a strong motivation for professional development and leadership. In the cases presented, the issue of leadership and motivation for professional growth constitute very strong characteristics in both intrapreneurs, as illustrated in Table 2, as follows:

Table 2. Behavioral characteristics and risks perceived

Interviewee	Behavioral Characteristics	Risks Perceived	Supplemental Risk
Carlos Eduardo	Determination, initiative, ability to take risks and introduce new ideas.	Possibility of losing his credibility.	People not directly related to the project.
Wilson Savino	Determination, initiative, ability to take risks and introduce new ideas.	It was not noticed.	People not directly related to the project.

Observe in Table 2 that Felício *et al.* (2012) and Marques *et al.* (2018) have demonstrated that motivation, personal commitment, and energy for developing CE projects are also characteristics of

intrapreneurs. The behavioral characteristics of employees of an organization – such as initiative, ability to take risks, and to introduce new ideas – also positively influence the development of CE (Gawke *et al.*, 2017; 2018). We can observe these behavioral characteristics in both intrapreneurs. During the interviews, it was possible to observe the high level of confidence that the team of Fiocruz researchers has in Dr. Carlos Eduardo, helping to explain why he expressly confirmed the risk of failure affecting his reputation. In contrast, Dr. Savino did not perceive this risk, perhaps due to his long successful track record as a researcher. However, the risk of failure and consequently the negative impact on reputation, as noted by Berzin and Pitt-Catsouphes (2015); Giannikis and Nikandrou (2013), and Kearney *et al.* (2013), seems to be true for the studied cases. According to Dr. Carlos Eduardo, the complementary risk of obstacles created by other employees in the institution originate in the distorted and unprofessional perspective of viewing international travel as advantageous and beneficial. Moreover, for Dr. Wilson Savino, “these people simply do not like to see others being happy.”

Characteristics of Corporate Entrepreneurship: Note in Table 3 that knowledge sharing is a characteristic highlighted by Turner and Pennington (2015). In the PAPI case, the low effectiveness of knowledge sharing can be illustrated in the example of the lectures for sharing understanding about the legal framework. In the second case, an example of effectiveness in the exchange of information and knowledge can be demonstrated by the example of delivering diplomas to the first class of master’s students by the President of Brazil at the time. The cases presented do not have the cyclical character of creating areas for promoting CE, as demonstrated by Kelley (2011). Legitimation is fundamental to a project’s development (Halme *et al.*, 2012; Hornsby *et al.*, 2013). In public institutions that adopt the Weberian model of bureaucracy, this legitimacy must be explicit and it was possible to observe in the cases studied.

biggest incentive for undertaking the project was “solidarity,” while for Dr. Carlos Eduardo “our model still does not consider financial incentives, so the stimulus is personal and the institutional duty has been carried out.”

DISCUSSION

Developing entrepreneurship in any institution, whether public or private is not an easy task to accomplish as indicated, by Bosma *et al.* (2011). Given that public institutions are usually managed according to the precepts of traditional bureaucracy (Loewenberger *et al.*, 2014; Brorström, 2015; Pekkarinen *et al.*, 2011), they face additional difficulties in stimulating this phenomenon, whether due to the action of agents (Vigoda-Gadot *et al.*, 2005) or the institutional rules in force in these organizations (Meynhardt and Diefenbach, 2012). According to Lages *et al.* (2017), it is difficult to create an internal environment that facilitates innovation and CE and in bureaucratic environments, this challenge seems to be even greater. The research question that guided this study – What are the factors that contribute to corporate entrepreneurship initiatives in a public institution of research and higher education in Brazil? Is answered as follows: (i) Level of education: both intrapreneurs are professionals who bear the title of Ph.D. This point seems to be in line with Urbano and Turró (2013), who indicate that there is a positive relationship between a high level of education and the development of CE in an organization; (ii) Leadership position: it is possible to observe in both cases that the activities of CE were developed by people working in various high and medium leadership positions throughout their careers. There seems to be a discrepancy between the positions of the protagonists (Fiocruz unit directors) from the cases described and those proposed by Meynhardt and Diefenbach (2012); Rigtering and Weitzel (2013); Shimizu (2012) and Lages *et al.* (2017), who all suggest a greater

Table 3. Identified characteristics

Case	Knowledge Sharing	Specific Area Creation	Legitimation
PAPI	Information sharing happens on a daily basis. However not effectively.	No creation of a specific area.	Ordinance as the institution’s representative in Europe.
Master Program	Informal meetings.	No creation of a specific area.	Designation as course coordinator.

Table 4. Aspects that stimulated the development of CE

Case	Top Management Support	Free Time	Autonomy	Incentive Programs	Defining Rules for the CE Process
PAPI	Full support from the Fiocruz management.	Delegation of roles and responsibility, using the characteristics of each team member.	Relative.	No formal stimuli; the stimulus was personal.	No clear rules as to what was expected of the project.
Master Program	Full support from Fiocruz management.	No need for project development.	Plenty of autonomy	No formal stimuli; the stimulus was personal and ideological.	No rules. The goal was to help Mozambique’s public health system.

Aspects that Stimulate Corporate Entrepreneurship: The two cases seem to confirm previous literature regarding the stimuli present in the internal environment of corporations for the development of CE (Alpkan *et al.*, 2010; Kuratko *et al.*, 2014; 2017; Lages *et al.*, 2017; Marques *et al.*, 2018; Shimizu, 2012). In both cases, there was the full support of the institution’s senior management, as stated by the interviewees: to Dr. Savino “it was the President’s project,” while for Dr. Carlos Eduardo “the support from the management was one of the factors that contributed most to the project’s development.” According to Dr. Carlos Eduardo, autonomy was “relative, considering the need for consultations with the head of the laboratory, directors and with the federal attorney’s office.” Moreover, Dr. Savino felt like he enjoyed complete autonomy: “The project was written and approved, so it was only a matter of following it.” As regards incentive programs or stimulations, Dr. Savino stated that the

tendency for employees of middle management and operational management to become intrapreneurs. Add to this, according to Chan *et al.* (2017), employees with a strong motivation for professional development and leadership can also develop CE and, in both cases, it could be observed. What motivations lead these individuals to innovate in a Brazilian public institution? Marques *et al.* (2018) argue that an intrapreneur from the public sector is motivated by the wishes of the community where he or she works. In the case of the master’s course, solidarity permeates the initiatives of the project.

In the PAPI case, the quest for resources for the development of science at Fiocruz and thus to contribute to its institutional role with the Brazilian population becomes evident in the speech of the manager. How does this institution give support to the emergence of corporate entrepreneurs? Support from senior management: Both

cases point to unreserved support from Fiocruz's senior management for developing the projects. Such support, as indicated by different scholars on the subject (Alpkan *et al.*, 2010; Kuratko *et al.*, 2014; Lages *et al.*, 2017; Marques *et al.*, 2018), is fundamental for the development of CE actions; and (iii) Legitimacy: In both cases, the legitimacy of the intrapreneurs was given formally. As noted by Halme *et al.* (2012) and Hornsby *et al.* (2013), legitimation is the recognition, within the organization, of the intrapreneur as an agent of change on the part of the organization and the confidence that it places in this agent or group of agents. Are these incentive mechanisms similar to those offered by private organizations? Despite the importance of incentive programs (Alpkan *et al.*, 2010; Kuratko, *et al.*, 2014; 2017; Lages *et al.*, 2017; Marques *et al.*, 2018; Shimizu, 2012), contrary to what takes place in private institutions, in both cases, there were neither financial incentives nor any other incentives, except the challenge, offered by the institution. The motivation and encouragement of the intrapreneurs are social needs (Marques *et al.*, 2018), strengthening their reputations (Berzin and Pitt-Catsouphes, 2015; Giannikis and Nikandrou, 2013; Kearney *et al.*, 2013) and personal characteristics (Marques *et al.*, 2018) as manifested by the interviewees. Analysis of the cases indicated that the institution's reputation and the strength of institutional myths represent key factors in stimulating CE in a public institution.

The organization's reputation plays an important role in developing contacts with other institutions or networks of institutions, thereby shortening the stages of the process and providing an endorsement to the intrapreneur in their actions beyond the institution. The myths of the institution seem to operate as a banner in the attitudes of its employees. One obstacle in the development of CE observed in the cases studied are the actions of people who are dissatisfied with the project, either due to disagreeing with its ideas or because of their unprofessional motivation, as they seek to undermine its execution. Thus, according to the findings of this study, we can suggest that CE, as expressed in a public institution, is a phenomenon that brings together a set of activities carried out by the individuals in the organization who have as internal stimuli the support given by the administration of this institution (the autonomy of action, the availability of time to develop new ideas and new work routines), aiming to support the activities of the intrapreneurs, although some adversities have to be faced. Supplementing these are external stimuli that could be observed in the claims of the interviewees – specifically the social needs arising from the interaction of the intrapreneurs with the environment in which they operate and the conditions created by the legal structure – which especially affect public organizations, such as in the cases of this study.

Implications and Limitations: The cases described have implications in several fields of study, not limited to (i) family business (Dias and Davila, 2018); (ii) contract negotiations (Dias *et al.*, 2021); (iii) transaction costs in entrepreneurial projects (Lopes, R; Massioui, F.; Barros, S.; Dias, M., 2021); (iv) governmental negotiations (Dias and Navarro, 2020); (v) international relations and business (Leitão, R; Rosales Jr, O; Machado, F; Corrêa, J.V; Dias, M., Costa, D., 2021), amongst others. This study is limited to FIOCRUZ in Brazil. Other institutions or countries may convey different results and are not part of the scope of this research. The study contributes to the growing literature on CE by helping students to organize their understanding of the phenomena under six aspects: concept, agents developing CE, characteristics of CE, aspects that stimulate CE, challenges for CE, and CE in the public sector from an emerging economy. We also believe that the cases presented contribute to stimulating CE within public institutions in general and public institutions of research and higher education in particular.

Future Research: We recommend that other studies be done on CE in government institutions in other countries, both qualitative – to compare with the finds of this research and quantitative – to consolidate the theoretical aspects underpinning the phenomenon of corporate entrepreneurship.

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